

CLAIMS

1. Method for the selective concentration of a macromolecule or of an agglomerate of molecules or of particles contained in a liquid sample, comprising successively the following steps:
 - formation of a stabilized dispersion of foam or emulsion type, from a medium comprising said liquid sample and an interface layer, said interface layer being capable of selectively fixing said macromolecule or said agglomerate to be concentrated; and
 - resorption of the dispersion formed during the preceding step so as to reform said interface layer.
2. Concentration method according to Claim 1, in which the dispersion formation step is carried out by mechanical agitation of the medium comprising said liquid sample and said interface layer.
3. Concentration method according to Claim 1, in which the dispersion formation step is carried out by injection, directly into the liquid sample, of gaseous or liquid capillary jets.
4. Concentration method according to any one of Claims 1 to 3, in which the interface layer comprises at least one molecule capable of selectively fixing said macromolecule or said agglomerate.
5. Concentration method according to Claim 4, in which the molecule capable of fixing the macromolecule or agglomerate of molecules or of

particles to be concentrated is a molecule comprising groups capable of fixing the macromolecule or agglomerate by chemical affinity, electric or magnetic polarization, and/or ionization, said molecule preferably being a surfactant molecule.

6. Concentration method according to any one of Claims 1 to 5, in which the macromolecule is chosen from the group consisting of nucleic acids and proteins, such as antigens and antibodies.
7. Concentration method according to any one of Claims 1 to 3, in which the agglomerate of molecules is a prion.
8. Concentration method according to any one of Claims 1 to 5, in which the agglomerate of particles is chosen from the group consisting of colloidal particles.
9. Method according to any one of Claims 1 to 6, in which the macromolecule to be concentrated is DNA.
10. Method according to Claim 4, in which, when the macromolecule to be concentrated is DNA, the molecule capable of fixing the DNA is functionalized with a probe so as to allow the specific hybridization of the DNA to be concentrated.
11. Method according to Claim 10, in which the molecule capable of fixing the DNA is a lipid functionalized with a DNA probe complementary to the DNA to be concentrated.

12. Method according to Claim 11, in which the lipid is a biotinylated lipid comprising an avidin group or avidin derivative, onto which the complementary DNA is grafted by means of a biotinylated end incorporated into said DNA beforehand.
13. Method according to Claim 11, in which the lipid is a cationic lipid comprising at least one spermine group onto which the complementary DNA is adsorbed.
14. Method for the purification of a macromolecule or of an agglomerate of molecules or particles initially contained in a liquid sample, comprising the concentration of said macromolecule or of said agglomerate within a layer using the method according to any one of Claims 1 to 13, and the elimination of the liquid sample depleted of said macromolecule or said agglomerate, after the concentration step.
15. Method for the detection of a macromolecule or of an agglomerate of molecules or particles initially contained in a liquid sample, comprising the concentration, within a layer, of said macromolecule or of said agglomerate using the method according to any one of Claims 1 to 13, and the detection of said macromolecule or of said agglomerate within said layer by means of appropriate detection techniques.
16. Method for the amplification of a macromolecule or of an agglomerate of molecules or of particles initially contained in a liquid sample, comprising

the concentration of said macromolecule or of said agglomerate within a layer using the method according to any one of Claims 1 to 13, and the replacement of said liquid sample, after the step
5 for concentrating said macromolecule or said agglomerate, within said layer, with a liquid comprising amplification agents, followed by the step of amplification by means of said agents.

- 10 17. Amplification method according to Claim 16, in which the macromolecule is a DNA.
18. Amplification method according to Claim 16, in which the agglomerate of molecules is a prion.